

Portsmouth Naval Shipyard)	Departmental
York County)	Findings of Fact and Order
Kittery, Maine)	Part 70 Air Emission License
A-452-70-A-I)	

After review of the Initial Part 70 License application, staff investigation reports and other documents in the applicant's file in the Bureau of Air Quality, pursuant to 38 M.R.S.A., Section 344 and Section 590, the Department finds the following facts:

I. REGISTRATION

A. Introduction

FACILITY	Portsmouth Naval Shipyard (PNS)
LICENSE NUMBER	A-452-70-A-I
LICENSE TYPE	Initial Part 70 License
SIC CODES	9711
NATURE OF BUSINESS	National Security (Submarine repair for U.S. Navy)
FACILITY LOCATION	Kittery, Maine
DATE OF LICENSE ISSUANCE	
LICENSE EXPIRATION DATE	

B. Emission Equipment

The following emission units are addressed by this Part 70 License:

	EMISSION UNIT	LOCATION	UNIT CAPACITY	UNIT TYPE
1	Furnace/forge	Building 76	5.2 MMBtu/hr	fuel burning equipment
2	Boiler #2	Building 72	182 MMBtu/hr	fuel burning equipment
3	Boiler #3	Building 72	158 MMBtu/hr	fuel burning equipment
4	Boiler #4	Building 72	158 MMBtu/hr	fuel burning equipment
5	Boiler #5	Building 72	158 MMBtu/hr	fuel burning equipment
6	Despatch Oven	Building 240	3.1 MMBtu/hr	fuel burning equipment
7	5 MW Turbine Generator	Building 72	59.8 MMBtu/hr (turbine) 47.2 MMBtu/hr (duct burner)	Fuel burning equipment (proposed co-generation project)
8	Air Compressor	Misc buildings/dry docks	2.7 MMBtu/hr	diesel powered process

PNS emission equipment continued...

8	Air Compressor	Misc buildings/dry docks	2.7 MMBtu/hr	diesel powered process
	Air Compressor	Misc buildings/dry docks	2.7 MMBtu/hr	diesel powered process
9	G20	Dry Dock 1	3.0 MMBtu/hr	backup generator
	G21	Dry Dock 2	3.5 MMBtu/hr	backup generator
	G22	Dry Dock 2	3.0 MMBtu/hr	backup generator
	G25	Dry Dock 3	3.0 MMBtu/hr	backup generator
	G37	Building 72	6.0 MMBtu/hr	backup generator
10	Coating operations	Misc buildings/dry docks	n/a	process equipment
11	Wood working	Misc buildings/dry docks	n/a	process equipment
12	Fuel dispensing	n/a	n/a	miscellaneous equipment
13	Cold cleaning degreasers	Misc buildings/dry docks	3-7 ft ² (freeboard surface area)	miscellaneous equipment
14	Radionuclides	Misc buildings/dry docks	1800 CFM & 1200 CFM ventilation systems	miscellaneous equipment

C. Insignificant Activities

Portsmouth Naval Shipyard has additional insignificant activities which do not need to be listed in the emission equipment table above. A list of the insignificant activities and the reasons why the activity is considered insignificant can be found in PNS Title V application pages 5-8 submitted to the Department on 8/27/96.

D. Application Classification

The application for Portsmouth Naval Shipyard does not include the licensing of increased emissions, however, it does include the licensing of a new 5-megawatt (MW) gas fired combustion turbine generator. The license is considered to be an amendment to PNS current air emission license, which is to be included in this Initial Part 70 License issued under Chapter 140 for a Part 70 source. Should PNS lease or privatize the operation of any facilities, the leasee or private operator is responsible for obtaining necessary permits.

E. General Facility Requirements

Portsmouth Naval Shipyard is subject to the regulations listed below, in addition to the regulations listed for specific units as described in Section II of this license.

Note: (s) means state enforceable (f) means federally enforceable

CITATION	REQUIREMENT SUMMARY
Chapter 101	Visible Emissions Regulation
Chapter 102	Open Burning
Chapter 103	Fuel Burning Equipment Particulate Emission Standard
Chapter 105	General Process Source Particulate Emission Standard
Chapter 106	Low Sulfur Fuel

General facility requirements continued...

Chapter 109	Emergency Episode Regulation
Chapter 110	Ambient Air Quality Standard
Chapter 116	Prohibited Dispersion Techniques
Chapter 118	Gasoline Dispensing Facilities Vapor Control
Chapter 129	Surface Coating Facilities
Chapter 130	Solvent Degreasers
Chapter 134	Reasonably Available Control Technology for Facilities that Emit Volatile Organic Compounds (VOC RACT)
Chapter 137	Emission Statements
Chapter 138	Reasonably Available Control Technology for Facilities that emit Nitrogen Oxides (NO _x RACT)
Chapter 140	Part 70 Air Emission License Regulations

II. EMISSION UNIT DESCRIPTION

Process Description

The Portsmouth Naval Shipyard is a repair, retrofit and general maintenance facility for the U.S. Navy's submarines. Activities at the Shipyard are overseen by the Naval Sea Systems Command, based in Washington, D.C.

Submarines brought to PNS for maintenance are moored at one of fourteen berths and/or one of three dry dock facilities, depending on the nature and extent of repairs and maintenance to be performed. There are two classes of submarines that are overhauled at the Shipyard, the older 637 Class boat and the newer 688 Class boat. A submarine may spend up to eighteen months in dry dock and another six months at a berth while repairs and maintenance take place. An overhaul may include such functions as systems upgrading and sandblasting and painting of the hull. An overhaul may also include system upgrading for internal components, such as ballast tanks and other structures, some of which are removed from the boat and reconditioned in one or more of the facility's numerous buildings. Activities at the shipyard include use of teflon, epoxy, other surface coatings, sealants, adhesives, metal cleaning agents and degreasers. Other activities at PNS include abrasive blasting, fiberglass manufacturing, welding, woodworking, and operation of a central heating plant and several emergency generators.

A. Facility-wide Applicability Requirements

Before proceeding with the specific emission unit requirements, the following table describes the requirements applicable to PNS facility-wide:

Regulatory Citation	Requirements (Emission limits, operational standards, etc.)	Federally Enforceable
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40 CFR 61 Subpart I	PNS demonstrates compliance with the standards listed in Part 61.102 using alternative procedures approved by the EPA, as documented in a letter to the Department of the Navy from the EPA dated 10 October, 1997.	Yes
40 CFR 68	PNS will complete and submit a risk management plan as required by June 1999.	Yes
40 CFR 82 Subpart B	Subpart B applies to facilities which service their own motor vehicles. This subpart requires that service technicians who repair or service motor vehicle air conditioning units be certified. This certification covers the use of approved equipment to recover and recycle certain refrigerants.	Yes
40 CFR 82 Subpart F	Subpart F requires that ozone depleting refrigerant which are recovered during servicing of non-motor vehicle air conditioning or refrigerant equipment. PNS will ensure that any disposal or repair work done at the Shipyard is done only by technicians who are properly certified.	Yes
40 CFR 61 Subpart M	PNS will follow appropriate procedures for asbestos emission control listed in Subpart 61.145. These procedures are compiled in an environmental corporation manual. PNS will also follow the standards of Subpart 61.150 for the disposal of asbestos. All asbestos is properly disposed of at PNS's hazardous waste disposal facility.	Yes
40 CFR Part 70	PNS is required to submit a timely and complete Title V operating permit application consistent with an EPA -approved Maine Title V program	Yes
Chapter 100	General regulatory definitions applicable to all sources.	Yes
Chapter 101	No person shall cause to be emitted any visible air contaminants from any general process including fugitive emission source that exceeds an opacity of 20 percent for more than five minutes in any one hour. A visual inspection of emission units will be used to determine compliance with facility-wide opacity requirements.	Yes
Chapter 117	PNS is granted a waiver of Chapter 117's requirement to install continuous opacity monitors due to the relatively short amount of time these monitors would be required to operate before the boilers are converted to burn natural gas.	Yes
Chapter 134 Amendment #2	PNS has applied for a source specific RACT determination for volatile organic compounds. Requirements for VOC RACT are included in Amendment #2 to Air Emission License #1823. PNS proposed to the Department a VOC emission rate from non-exempt sources of 48 tons per year as a facility-wide emission limitation. PNS has implemented good housekeeping practices and has implemented reformulated coatings.	Yes
Chapter 138 Amendment #2	To reduce NOx, PNS shall retard the injection timing on the compressors' diesel engines. All other reciprocating engines must record and operate less than 500 hours per year and operate according to the requirements of the Air Bureau's March 1995 SICE Guideline.	Yes
Chapter 138 Amendment #2	The schedule for the gas conversion project is as follows: Start Construction - 1997 Boiler 3 Conversion - by August 19, 1999 Boiler 2 Conversion - by April 30, 2000 Boiler 4 Conversion - by January 25, 2001 Boiler 5 Conversion - by October 22, 2001 If these dates are not met, except for conditions beyond the direct control of PNS, the boilers will be retrofitted to achieve the RACT emission limit of 0.30 lb NOx /MMBtu.	Yes
Chapter 138 Amendment #2	PNS shall limit NOx emissions to 0.40 lb/MMBtu during the non-ozone heating season and 0.35 lb/MMBtu during the ozone season (May 1 - Sept 30). After the conversion to burn natural gas, the boilers will meet a more stringent NOx emission limit.	Yes

B. Description of Controls for Emission Units #2, #3, #4, and #5 (Oil-fired Boilers)

(1) Unit Size and Age

Boiler #2 was installed in 1978 and manufactured by Babcock & Wilcox with a maximum design heat input capacity of 182 MMBtu/hr firing #6 fuel oil. Boilers #3, #4, and #5 were

installed in 1943 and manufactured by Edge Moor Ironworks each with a maximum design heat input capacity of 158 MMBtu/hr firing #6 fuel oil. The boilers were installed prior to the New Source Performance Standards (NSPS) applicability date.

PNS is in the process of converting their main boilers from burning #6 fuel oil to natural gas. Currently, Boiler #3 has been converted and Boiler #2 is in the process of conversion, however, Boilers #4 and #5 currently still fire #6 fuel oil only. In order to meet Reasonable Available Control Technology for NO_x (NO_x RACT) the Shipyard has agreed to convert all four main boilers to combust natural gas and #2 fuel oil. PNS is limited to a maximum sulfur content of 0.5% by weight in its #6 fuel oil due to requirements per ambient air dispersion modeling. Chapter 106 of the Air Bureau regulations allow for a maximum of 2.0% sulfur content by weight when burning residual #6 fuel oil, however, streamlining in this initial Title V license will require 0.5% by weight sulfur content in the #6 fuel oil. The boilers are operated to provide high pressure steam for power generation and the heating needs of the shipyard. Emissions from Boilers #2, #3, #4, and #5 each vent through separate 167 foot stacks.

(2) Pre Fuel Conversion NO_x RACT Requirements

NO_x RACT for Boilers #2, #3, #4, and #5 was determined to be a boiler optimization program to establish a unit specific RACT limit to be in effect until conversion to low NO_x burners and dual fuel (natural gas/distillate oil) operation. The boiler optimization program should in no way jeopardize the safe and reliable operation of the boilers. PNS shall operate the boilers within the limits of the following parameters to reduce NO_x emissions prior to conversion:

1) During the Ozone season 15 May -15 September (NO_x limit is 0.35 lbs/MMBtu)

a) Boiler #2

- (1) (<50 k lb/hr) @ summer loads - operate with top two burners out of service and less than 3% O₂.
- (2) (50-100 k lb/hr) @ intermediate loads - operate with 25% fuel bias and less than 2% O₂.
- (3) (100-150 k lb/hr) @ high loads - operate with 15% fuel bias and less than 2.2% O₂.

b) Boilers #3, #4, #5

- (1) (<35 k lb/hr) @ minimum boiler loads - operate with top burners out of service and less than 9% O₂.
- (2) (35-50 k lb/hr) @ low loads - operate with top two burners out of service and less than 7% O₂.
- (3) (50-85 k lb/hr) @ intermediate loads - operate with 20% fuel bias and less than 7.5% O₂.
- (4) (85-120 k lb/hr) @ high loads - operate with 5% fuel bias and less than 6.5% O₂.

2) *Rest of the year - 16 September - 14 May (NO_x limit is 0.40 lbs/MMBtu)*

a) Boiler #2

Boiler #2 will meet this emission rate at all loads. Fuel oil will be biased (oil pressure to the lower burners higher than oil pressure to upper burners) to at least 10%.

b) Boiler #3, #4, #5

These boilers will meet this emission rate at all loads. Fuel oil will be biased (oil pressure to the lower burners higher than oil pressure to upper burners) to at least 15%.

3) *Record keeping and Reporting:*

- a) Continuously record steam load and O₂ (circular charts).
- b) Log fuel delivery pressure gauge readings (fuel bias) as part of normal data recording.
- c) Examine charts and log at end of each 24 hour day to determine if any exceedences of license requirements (above) occurred.
- d) Note in a written log the time, duration, cause, and steps taken for each exceedence event.

4) *Pre Fuel Conversion Project Limits (Before the boilers are converted to burn natural gas)*

Boilers #2, #3, #4, and #5 are subject to the following summary of regulatory requirements:

Note: The definition of “streamlining” means that the most stringent of two or more applicable requirements supercedes the other less stringent requirement(s).

	CITATION	REQUIREMENT SUMMARY
1. Capacity	Chapter 140, BPT	Boiler #2 shall not exceed a heat input rate of 182 MMBtu/hr
	Chapter 140, BPT	Boiler #3 shall not exceed a heat input rate of 158 MMBtu/hr
	Chapter 140, BPT	Boiler #4 shall not exceed a heat input rate of 158 MMBtu/hr
	Chapter 140, BPT	Boiler #5 shall not exceed a heat input rate of 158 MMBtu/hr
	Chapter 140, BPT	Limited to an annual fuel cap of 30 million gallons of #6 fuel oil with a maximum sulfur content of 0.5% by weight.

Regulatory applicability continued...

2. PM	Chapter 103	0.20 lb/MMBtu when burning residual or distillate oil
	Chapter 140, BPT (air dispersion modeling)	16.5 lb PM/hr (Boilers #3, #4, and #5) 16.5 lb PM/hr (Boilers #2)
3. PM ₁₀	Chapter 140, BPT	0.20 lb/MMBtu when burning residual or distillate oil
	Chapter 140, BPT (air dispersion modeling)	16.5 lb PM/hr (Boilers #3, #4, and #5) 16.5 lb PM/hr (Boilers #2)
4. SO ₂	Chapter 140, BPT	0.5% by weight when burning residual #6 fuel oil
	Chapter 140, BPT	82.2 lb/hr (for each of Boilers #3, #4, and #5) 94.6 lb/hr (for Boiler #2)
5. NO _x	Chapter 138	0.35 lb/MMBtu (During ozone season May 15-Sept 15) 0.40 lb/MMBtu
	Chapter 138	Boilers #2, #3, #4, and #5 optimization program (a logbook shall be maintained documenting these procedures)
	Chapter 140, BPT	55.3 lb/hr (Boilers #3, #4, and #5) 63.2 lb/hr (Boiler #2)
6. CO	Chapter 140, BPT	5.3 lb/hr (Boilers #3, #4, and #5) 6.1 lb/hr (Boiler #2)
7. VOC	Chapter 140, BPT	1.4 lb/hr (Boilers #3, #4, and #5) 1.6 lb/hr (Boiler #2)
8. Visible Emissions	Chapter 101, Section 2(A)(1)	Single boiler: 30 percent for no more than 15 minutes in any continuous 3-hour period. (<i>Streamlined into Condition #27 D</i>)
	Chapter 140, BPT	Each stack: PNS shall not exceed an opacity of 30 % on a six (6) minute block average basis, for more than two (2) six (6) minute block averages in a 3-hour period.
	Chapter 117	PNS was granted a waiver of Chapter 117's requirement to install continuous opacity monitors due to the relatively short amount of time these monitors would be required to operate before converting to burn natural gas. PNS was required and has performed particulate emission stack tests for Boilers #2 and #5 in accordance with 40 CFR Part 60 or other methods approved or required by the Department to demonstrate their ability to meet the 0.20 lb/MMBtu emission limit by May 31, 1998.

(3) NO_x RACT Post Boiler Conversion Project BPT Requirements

PNS requested an amendment to their air emission license (#1823) to address the conversion of the four main power boilers from firing #6 fuel oil to natural gas with #2 fuel oil as a backup fuel. This was addressed in Air Emission License Amendment A-452-71-E-A issued May 5, 1997. Although the conversion process is a significant capital and labor intensive project for the Shipyard, the net increase of emissions are under four tpy for any one regulated pollutant and under eight tpy of

total regulated pollutants and therefore was considered a minor revision. This conversion project will result in an overall net decrease in emissions of SO₂, NO_x, VOC, CO, and particulate matter.

PNS, as part of the NO_x RACT compliance plan, has chosen to convert their four main power boilers from residual fuel oil fired to a cleaner, dual fuel fired operation on natural gas and #2 fuel oil. A control technology evaluation was performed to determine the appropriate air pollution control technology to be used on the boilers after the conversion to natural gas. Alternative control technologies were evaluated in terms of their technical feasibility and environmental, economic and energy impacts. The control technology determination for each pollutant was made by evaluating the most stringent control alternative available. If it was determined that this level of control was technically or economically infeasible for this application, then the next most stringent level of control was identified and similarly evaluated. This process was continued until a control level was reached which, upon evaluation, was determined to be appropriate based on technical, environmental and economic considerations.

This conversion project is part of the Shipyard's NO_x RACT Compliance Plan and was considered a minor modification as defined in Chapter 100 of the Maine Air Regulations. The four boilers, after the conversion to burn natural gas, will be rated with the same maximum design heat capacity as before, with Boilers #3, #4, and #5 rated at 158 MMBtu/hr each and Boiler #2 rated at 182 MMBtu/hr. Currently Boiler #3 has been converted to combust natural gas, however, the boiler will fire #2 fuel oil in the interim until the natural gas becomes available in January 2000.

NO_x Emissions

Low NO_x burners were selected as the appropriate control technology for nitrogen oxide emissions. Low NO_x burners have been used on several types of oil and gas-fired boilers. The low NO_x burners use slower mixing of combustion air and fuel to lengthen the flame and reduce peak flame temperatures in the burner zone, thereby decreasing thermal NO_x formation. Furthermore, since natural gas contains essentially no fuel bound nitrogen, NO_x emissions from burning natural gas are substantially lower than those from burning #6 fuel oil. For Boilers #3, #4, and #5, this technology which meets BPT, will reduce NO_x emissions when firing natural gas to 0.15 lb/MMBtu and 0.30 lb/MMBtu when firing backup distillate fuel oil. For the Babcock and Wilcox Boiler #2, this technology will also reduce NO_x emissions when firing natural gas to 0.15 lb/MMBtu and 0.30 lb/MMBtu when firing backup fuel oil.

PM and SO₂ Emissions

The use of natural gas with low sulfur #2 fuel oil (0.5% sulfur) as a backup fuel was chosen as the appropriate control technology for SO₂ and PM. Use of low sulfur #2 fuel oil instead of 1% sulfur marine diesel will substantially reduce SO₂ and PM emissions. The use of natural gas and low sulfur #2 fuel oil as auxiliary fuel is BPT and is considered an appropriate SO₂ and PM control technology for the PNS boilers.

CO and VOC Emissions

The control technology chosen for VOC and CO control was determined to be good combustion practices with low NO_x burners operating within a controlled peak flame temperature range. This control technology will impart no adverse economic, energy or environmental impacts. The only other technique available for control of VOC and CO emissions from combustion processes is an oxidation catalyst. Although oxidation catalysts routinely achieve over 90% reduction of CO, they cannot be applied to PNS boilers due to prohibitive space constraints and adverse economic impacts (over \$21,000 per ton of CO removed). Therefore, this technology was not pursued.

Potential emissions are based on firing natural gas and a maximum of 60 days of distillate fuel oil due to an interruptible gas contract. The current annual capacity factor is at 0.75 with a residual fuel oil limit of 30 million gallons per year, approximately 40 million gallons of #6 fuel oil could be combusted at 100% capacity. PNS will be keeping the annual capacity factor of 0.75 after the conversion to natural gas is complete. The potential emission rates of criteria pollutants from the boilers both before and after the natural gas conversion are summarized in the following table:

Pollutant	Control Technology Determination	Emission Rate ¹ Dual Fuel (ton/yr)	Emission Rate ² #6 Fuel oil (ton/yr)	Net emission Decrease (tpy)
PM	Low sulfur (0.5%) #2 fuel oil	6.8	114.2	-107.4
SO ₂	Low sulfur (0.5%) #2 fuel oil	184.7	1145.7	-961.0
NO _x	Low NO _x Burners	383.1	875.6	-492.5
CO	Good Combustion Practices	79.3	116.8	-37.5
VOC	Good Combustion Practices	2.9	11.0	-8.1

1 Assumes a fuel cap of 3.92 billion cubic feet of natural gas and 5,060,550 gal/year of backup #2 fuel oil. These figures reflect an annual capacity factor of 0.75.

2 Emission factors are based on AP-42 except NO_x. NO_x is based on site specific vendor quotation

Emission Standards

The NO_x emission limit of 0.15 lb/MMBtu when firing natural gas is RACT and is now considered BPT for this Title V license. The PM emission limit of 0.08 is required per Chapter 103 "Particulate Emission Standards" of the Maine Air Bureau Regulations. PNS will limit Boilers #2, #3, #4, and #5 emissions to the following, firing natural gas:

<u>Pollutant</u>	<u>lb/MMBtu</u>	Boilers #3, #4, #5 <u>(lb/hr) each</u>	Boilers #2 <u>(lb/hr)</u>
PM	0.08	0.5	0.6
PM ₁₀	--	0.5	0.6
SO ₂	--	13.3	16.3
NO _x	0.15 (natural gas)	27.7	31.9
CO	--	8.0	11.6
VOC	--	0.2	0.3

PNS shall be limited to the following short-term emission limits when firing #2 fuel oil as back-up:

<u>Pollutant</u>	<u>lb/MMBtu</u>	Boilers #3, #4, #5 <u>(lb/hr) each</u>	Boilers #2 <u>(lb/hr)</u>
PM	0.08	2.3	2.9
PM ₁₀	--	2.3	2.9
SO ₂	--	81.1	92.3
NO _x	0.30 (oil back-up)	48.0	54.6
CO	--	5.7	6.5
VOC	--	1.3	1.5

The Shipyard will perform NO_x emission stack testing at "typical seasonal load" in accordance with 40 CFR Part 60 or other methods approved or required by the Department, to demonstrate their ability to meet the 0.15 lb/MMBtu NO_x emission limit while combusting natural gas after the conversion project is completed.

After the conversion to combust natural gas, PNS shall not exceed an opacity of 20% on a six (6) minute block average basis, except for no more than two (2) six (6) minute block averages in a 3-hour period when operating with either natural gas or #2 fuel oil.

C. Proposed 5-megawatt (MW) natural gas fired turbine generator (Emission Unit #7)

There are currently four power boilers on site which provide steam to various operations. These boilers are #6 oil fired but are currently being converted to dual fuel operation (natural gas with #2 oil backup). The proposed project is a co-generation project that will consist of a 5 megawatt (MW) natural gas-fired turbine with supplemental duct burning. The heat input for the units are 59.77 MMBtu/hr for

the turbine and 47.2 MMBtu/hr for the duct burner. The turbine will provide 25,000 pounds per hour of steam load while the duct burner will provide an additional 45,000 pounds per hour of steam.

The project will serve two purposes. First, the project will provide the Shipyard with an on-site electrical power source which will result in long term costs savings for the facility. Also, the electricity will be generated by a “cleaner” burning fuel, natural gas. Second, the project will supply steam to the facility and will be considered the primary source of steam for most of the year. The duct burner will only be operated when the steam load at the site exceeds the 25,000 #/hr load of the turbine. While the existing boilers will be retained on-site they will be used as back-up or supplemental sources. The new project will be one of the primary source of steam for the site.

This project application is designed to provide operation of the turbine for 8,760 hours per year at full load. The duct burner will be operated no more than 5,383 hours per year at full load. This operational scenario is based on the steam load requirements of the site and environmental considerations. The project will operate so that facility-wide tons per year emissions limits of all pollutants will remain the same as currently allowed. No licensed allowed increase in tons per year emissions is requested by including this project in PNS initial Title V license.

BACT analysis

The turbine project is subject to New Source Performance Standards (NSPS), 40 CFR Part 60, Subpart GG - Standards of Performance for Stationary Gas Turbines, for which construction is commenced after October 3, 1977.

40 CFR Part 60, Subpart GG establishes the following emission limits:

Pursuant to 40 CFR Part 60.333 SO₂ is limited to (a) 0.015% by volume @ 15% O₂ on a dry basis or (b) the fuel sulfur content shall not exceed 0.8% by weight. Pursuant to 40 CFR Part 60.332(a)(1) NO_x is limited based on the following equation:

$$\text{NO}_x - \text{STD} = 0.0075 * (14.4/Y) + F,$$

where STD is the allowable NO_x emissions (percent by volume at 15% O₂ and on a dry basis), Y is a function of the manufacturer's rated load (kilojoules per watt hour), and F is a function of the fuel-bound nitrogen.

The NSPS establishes a nominal NO_x emission limit for PNS of 75 ppmdv at 100% load. Subpart GG also limits the fuel sulfur content to no more than 0.8% by weight. While the NSPS does apply, the proposed BACT is substantially more stringent; compliance with BACT will insure compliance with the NSPS.

Summary of the BACT analysis for each of the pollutants:

According to a review of the BACT/LAER Clearinghouse Database, as of September 1999, there was only one listing for a installation similar to the Portsmouth Project. The similar project is a 5 MW natural gas-fired Solar Taurus turbine and a heat recovery boiler installed in Pennsylvania. For that project, BACT for the combustion turbine was considered low NO_x burners for NO_x, good combustion practices for CO and emission rate limits for PM and VOC.

Sulfur Dioxide (SO₂)

PNS proposes to use only natural gas as the combustion fuel. Natural gas is considered to be BACT for the control of sulfur dioxide SO₂ for this type of project, therefore, no additional SO₂ controls were considered.

Nitrogen Oxides (NO_x)

The combustion turbine is equipped with dry low NO_x combustors. The only other available control technology for the turbine is Selective Catalytic Reduction (SCR) equipment. A thorough BACT analysis for the installation and operation of an SCR is attached in the PNS amendment application package dated Nov 16, 1999. SCR technology is unproven long-term for this size turbine generator. In addition, the SCR technology was determined too costly for this size project with a cost of over \$5,000 per ton of NO_x removed. Therefore, NO_x BACT for the heat recovery boiler and duct burner is considered to be the use of natural gas with dry low NO_x combustors. NO_x emissions shall be limited to 0.10 lb/MMBtu and 25 ppmdv.

Particulate (PM), Carbon Monoxide (CO), and VOC

BACT for PM is met through the use of natural gas. No additional controls are available to lower particulate emissions. CO and VOC BACT for the project is met through good combustion practices, this includes routine preventative maintenance operations.

The natural gas-fired combustion turbine shall meet the following limits:

Pollutant	Load	ppmdv	lb/MMBtu	lb/hr
PM	All	--	0.02	1.3
PM ₁₀	All	--	--	1.3
SO ₂	All	--	--	0.1
NO _x	All	25 (corrected to 15% O ₂)	0.10	6.7
CO	All	--	--	8.2
VOC	All	--	--	0.3

The natural gas-fired duct burner shall not exceed the following emission limits:

Pollutant	Load	ppmdv	lb/MMBtu	lb/hr
PM	All	--	0.02	1.0
PM ₁₀	All	--	--	1.0
SO ₂	All	--	--	0.1
NO _x	All	25 (corrected to 15% O ₂)	0.10	4.7
CO	All	--	--	3.8
VOC	All	--	--	0.2

Total natural gas turbine/duct burner project emissions:

Pollutant	Emissions (tons per year)
Particulate Matter	7.6
Sulfur Dioxide	0.3
Nitrogen Oxides	38.9
Carbon Monoxide	42.1
VOC	1.3

D. Emission units #10, #12, and #13

VOC RACT requirements per Chapter 134

PNS is in attainment for all US. EPA designated criteria air pollutants, except for ozone which York county is designated as moderate nonattainment. Maine is currently part of the Ozone Transport Region (OTR), and thus, the entire State of Maine is subject to the nonattainment requirements for ozone. Chapter 134 of the Maine Air Regulations requires

facilities that have the potential to emit forty (40) tons or more of VOC per calendar year to apply VOC RACT (Reasonable Available Control Technology) to their applicable VOC emissions. Chapter 134 VOC RACT requirements are incorporated into this initial Part 70 license.

The following summary of regulatory requirements applies to the coating and painting areas of the shipyard. PNS is subject to the following summary of regulatory requirements:

The total non-exempt fugitive VOC emissions (not including VOC emissions from degreasing operations) from the Portsmouth Naval Shipyard shall not exceed 48 tons per year based on a 12 month rolling total updated monthly and shall not exceed 15 tons during any one calendar month, where:

- i. the first 12 months shall be from January 1, 1996 to December 31, 1996;
- ii. the pounds of VOC emissions are calculated using the PNS Hazardous Substance Management System (HSMS). The HSMS tracking system, approved by the

MEDEP, is described in Enclosure (1) of the July 11, 1997 submittal. The HSMS is used to track all hazardous material and VOC and HAP emissions. PNS may create an equivalent system, approved by the Department, to track VOC and HAP emissions.

- iii. The HSMS shall provide what coatings are used and actual emissions. The system shall provide a demonstration that the gallons of specific coating used multiplied by the actual VOC content is less than the allowable RACT emissions limits.

(Periodic Monitoring)

PNS shall use the HSMS tracking system, or equivalent system approved by the Department, as noted above. The system tracks hazardous material issuance and use and quantifies VOC emissions by material balance. PNS shall meet the following Volatile Organic Hazardous Air Pollutants (VOHAP) limits for Marine Coatings:

Coating Categories	VOHAP limits ^{abc}		
	Grams/liter coating (minus water and exempt compounds)	Grams/liter solids temp $\geq 4.5^{\circ}\text{C}$	Grams/liter solids temp $< 4.5^{\circ}\text{C}$ ^d
General Use	340	571	728
Specialty			
Air Flask	340	571	728
Antenna	530	1,439	
Antifoulant	400	765	971
Heat resistant	420	841	1,069
High-gloss	420	841	1,069
High-temperature	500	1,237	1,597
Inorganic zinc high build	340	571	728
Military exterior	340	571	728
Mist	610	2,235	---
Navigational aids	550	1,597	---
Nonskid	340	571	728
Nuclear	420	841	1,069
Organic zinc	360	630	802
Pretreatment wash primer	780	11,095	---
Repair and maint. of thermoplastics	550	1,597	---
Rubber camouflage	340	571	728
Sealant for thermal spray aluminum	610	2,235	---
Special marking	490	1,178	---
Specialty interior	340	571	728
Tack coat	610	2,235	---
Undersea weapons systems	340	571	728
Weld-through precon. primer	650	2,885	---

- a. The limits are expressed in two sets of equivalent units. Either set of limits may be used for the compliance procedure described in 63.785(c)(1) of the "National Emission Standards for Hazardous Air Pollutants for Shipbuilding and Ship Repair Operations", but only the limits expressed in units of g/l solids (nonvolatiles) shall be used for the compliance procedures described in 63.785(c)(2) through (4).
 - b. VOC (including exempt compounds listed as HAP) shall be used as a surrogate for VOHAP for those compliance procedures described in 63.785(c)(1) through (3).
 - c. To convert from g/l to lb/gal, multiply by (3.785 liters/gal)/(453.6 grams/lb) or 1/120.
 - d. These limits apply during cold-weather time periods, as defined in 63.782. Cold-weather allowances are not given to coatings in categories that permit over a 40 percent VOHAP content by volume. Such coatings are subject to the same limits regardless of weather conditions.
1. PNS may use up to fifty gallons of any combination of coatings which exceed the VOC emission limitation of the above table during any twelve consecutive month period.
 2. In the event that small amounts of specialty coating with a higher VOC content than is allowed is needed, then emissions averaging over a 30 day period will be allowed to provide flexibility. When using the emissions averaging, PNS must show compliance by averaging actual daily emissions over the 30 day period.

Coating Operations (Emission Unit #10)

The Coating operations are subject to Chapter 129 of the Department's regulations. Chapter 129 states that "only Section 10 of Chapter 129 apply to Shipbuilding and Ship Repair". Section 10 of Chapter 129 incorporate by reference the requirements of the Shipbuilding MACT 40 CFR Part 63, Subpart II (National Emission Standards for Hazardous Air Pollutants for Shipbuilding and Ship Repair (Surface Coating) Operations". PNS is not subject to the Shipbuilding MACT due to their acceptance of the limit of 10 tons per year of any individual HAP and 25 tpy of total HAP. However, PNS being an "area" source, will meet the requirements set forth in EPA's Shipbuilding Control Technique Guidance, which are similar to the requirements of the Shipbuilding MACT.

Fuel Dispensing Operations (Emission unit #12)

The fuel dispensing operations which pertain to gasoline storage and dispensing shall meet the requirements of Chapter 118:

- A. The fill pipe shall extend within 6 inches of the bottom of the gasoline storage tank. [MEDEP Chapter 118]
- B. The licensee shall maintain records of the monthly and annual throughput of gasoline. [MEDEP Chapter 118]

Degreaser Units (Emission unit #13)

Unit Size and Age

PNS uses several parts washers and solvent degreasers. These degreasers are maintained by an outside contractor and are used for the cleaning of various components/parts for the Shipyard's operation. The solvent degreasers are subject to the following summary of regulatory requirements:

CITATION	Requirements (Emission limits, operational standards, etc.)	Requirements - Periodic Monitoring (Recordkeeping, reporting, etc.)
Chapter 130	Each cold cleaner must have a label summarizing the operation standards listed in paragraphs 3(A)(2)(a) through 3(A)(2)(f).	The Department can request testing of the sources by the listed methods. The owner of any solvent degreaser is responsible for collecting and recording all applicable information, performing compliance testing, and submitting reports of results to the Department.
Chapter 130	Close the cover whenever parts are not being handled in the cold cleaning degreaser.	Monthly records of the amount of solvent added to each units shall be kept for a two year period.
Chapter 130	Drain the cleaned parts for at least fifteen (15) seconds or until dripping ceases.	Records must be kept on the results of all tests conducted in accordance with the requirements in Section 5.
Chapter 130	If used, supply a solvent spray that is a solid fluid stream at a pressure that does not exceed ten pounds per square inch gauge.	The owner or operator of a solvent degreaser shall provide the information listed for initial compliance certification: a. name of owner; b. address and phone number of a contact person; and c. serial number for each solvent degreaser.
Chapter 130	Do not degrease porous or absorbent materials, such as cloth, leather, wood, or rope.	For each solvent degreaser, the initial compliance certification shall also include at a minimum: a. the solvent true vapor pressure b. method of compliance used to measure flow rate or solvent true vapor pressure and VOC concentration g. certification that the solvent degreaser is in compliance with the applicable standards.
Chapter 130	Minimize drafts across the top of each cold cleaning degreaser.	By May 31, 1995, or upon the startup of a new solvent degreaser, the owner of the solvent degreaser shall perform all tests and submit to the Department, results of all tests and calculations necessary to demonstrate that the solvent degreaser will be in compliance with all applicable standards.
Chapter 130	Do not operate the cold cleaning degreaser upon the occurrence of any visible solvent leak until such leak is repaired.	Initial compliance certification of a solvent degreaser shall be provided to the Department by January 1, 1995.
Chapter 130	Vapor tight containers shall be used for the storage of spent or fresh material containing VOC and for the storage or disposal of cloth or paper impregnated with VOC that are used for surface preparation, clean up or coating removal.	The owner or operator of a solvent degreaser shall achieve final compliance with this regulation on or before May 31, 1995.
Chapter 130	The use of materials containing VOC is prohibited for the cleanup of spray equipment unless equipment is used to collect the cleaning compounds and to minimize their evaporation to the atmosphere.	

D. Facility Emissions

Total Allowable Annual Emissions for the Facility
(used to calculate the annual license fee)

Pollutant	TPY (Prior to January 1, 2001)	TPY (After January 1, 2001)
PM	131	72
PM ₁₀	131	72
SO ₂	1175	210
NO _x	1062	515

CO	156	129
VOC	73	67
HAP	10 (single), 25 (total)	10 (single), 25 (total)

III.A AMBIENT AIR QUALITY ANALYSIS

A. Overview

A combination of screening and refined modeling was performed to show that the applicant's proposed operating scenarios, in conjunction with other sources, would not cause or contribute to violations of Maine Ambient Air Quality Standards (MAAQS) and National Ambient Air Quality Standards (NAAQS) for SO₂, PM₁₀, NO₂, CO and Pb. Class I and Class II increment modeling for SO₂, TSP, PM₁₀ and NO₂, was not performed because the applicant's proposed operating scenarios emissions are below applicable baseline emissions. The new operational scenario, with the 5 MW natural gas turbine generator, is not expected to significantly change the results of this modeling analysis. The new project was not modeled since the expected criteria pollutants tons per year emissions are below "Significant Emission Levels" as defined in Chapter 101 of the Department's regulations.

B. Model Inputs

Screening modeling was performed using ISCST2 and the Valley mode of Complex I (CI-VM). The ISCST2 model was used to evaluate impacts in all areas. The CI-VM model was used to evaluate impacts in all complex and intermediate terrain, i.e., areas where terrain elevations exceed the proposed stack-top elevation.

ISCST3 sequential refined modeling analyses for all operating load scenarios were performed to demonstrate compliance with standards. All modeling was performed in accordance with all applicable requirements of Maine Department of Environmental Protection, Bureau of Air Quality (MEDEP-BAQ) and the United States Environmental Protection Agency (EPA).

The meteorological data base used in the ISCST2 screening analysis consisted of MEDEP-BAQ's standard fifty-four hours of data which represents a variety of wind speed and stability class combinations. A wind speed of 2.5 m/s and Class "F" stability were assumed in the CI-VM analysis.

A valid five (5) year hourly meteorological off-site database collected at Pease AFB in Portsmouth, NH was used in the refined modeling. The primary wind speed and resultant wind direction data were collected at a height of 3.96 meters at the Pease AFB meteorological tower during the 1979-1983 calendar years. Data substitution

Stack parameters used in the modeling for the applicant's proposed facility are listed in Table IV-1. The modeling analyses accounted for potential building wake effects on emissions from the modeled stacks that are below the respective formula GEP stack height.

Part A. Proposed

[illegible]

Boilers #4, 5 & 6	12.19	68.90	81.95	2.44	354.681	4772.976
Combustion Turbine	12.19	5.30	81.95	4.05	354.681	4772.976
EDG	12.19	7.32	81.95	0.15	354.681	4772.976
PSNH, NEWINGTON STATION, NEWINGTON, NH						
Boilers #1A & 1B	10.67	56.10	141.6	1.07	354.163	4773.156
EGU1	10.67	125.00	141.6	6.34	354.163	4773.156
EDG	10.67	3.66	141.6	0.305	354.163	4773.156

Maximum (100%), typical (75%) and minimum (50%) operating load cases for #2 fuel oil, #6 fuel oil and natural gas were modeled accounting for the range of possible operating scenarios associated with building 72 boilers. Emission parameters for the applicant's proposed limiting operating scenarios used in the final modeling analyses are listed in Table IV-2. For the purpose of determining PM₁₀ impacts, all TSP emissions were conservatively assumed to convert to PM₁₀. For the purpose of determining NO₂ impacts, the Ambient Ratio Method was used to convert all NO_x impacts to NO₂ impacts by using a 0.75 multiplying factor.

Table IV-2. Emission Parameters.

Part A. Future/Current								
Facility / Stack	Avg. Period	SO ₂ (g/s)	PM (g/s)	NO _x (g/s)	CO (g/s)	Pb (g/s)	Temp (°K)	Stack Vel (m/s)
PORTSMOUTH NAVAL SHIPYARD, KITTERY								
#6 FUEL OIL MAXIMUM (100% capacity) SCENARIO								
Bldg. 72 Boiler #2	ALL	13.15	2.07	11.22	0.84	6.56E-03	425.93	15.80
Bldg. 72 Boiler #3	ALL	10.51	3.33	8.97	0.67	5.24E-04	478.15	35.58
Bldg. 72 Boiler #4	ALL	10.51	2.08	8.97	0.67	5.24E-04	475.37	32.25
Bldg. 72 Boiler #5	ALL	11.31	2.98	8.97	0.67	5.24E-04	455.93	26.42
#6 FUEL OIL MINIMUM (50% capacity) SCENARIO								
Bldg. 72 Boiler #2	ALL	6.57	1.04	5.61	0.42	3.28E-04	425.93	7.90
Bldg. 72 Boiler #3	ALL	5.26	1.66	4.49	0.33	2.62E-04	478.15	17.79
Bldg. 72 Boiler #4	ALL	5.26	1.04	4.49	0.33	2.62E-04	475.37	16.12
Bldg. 72 Boiler #5	ALL	5.90	1.48	5.53	0.33	2.62E-04	455.93	13.21
#2 FUEL OIL MAXIMUM (100% capacity) SCENARIO								
Bldg. 72 Boiler #2	ALL	12.878	0.363	2.358	0.907	2.24E-04	425.93	15.85
Bldg. 72 Boiler #3	ALL	10.298	0.290	1.885	0.725	1.79E-04	478.15	35.59
Bldg. 72 Boiler #4	ALL	10.298	0.290	1.885	0.725	1.79E-04	475.37	32.21
Bldg. 72 Boiler #5	ALL	10.298	0.290	1.885	0.725	1.79E-04	455.93	26.43
#2 FUEL OIL MINIMUM (50% capacity) SCENARIO								
Bldg. 72 Boiler #2	ALL	6.439	0.181	1.179	0.453	1.12E-04	425.93	7.92
Bldg. 72 Boiler #3	ALL	5.149	0.145	0.943	0.363	8.97E-05	478.15	17.79
Bldg. 72 Boiler #4	ALL	5.149	0.145	0.943	0.363	8.97E-05	475.37	16.11

) **Departmental**
) **Findings of Fact and Order**
) **Part 70 Air Emission License**
 20

Bldg. 72 Boiler #5	ALL	5.149	0.145	0.943	0.363	8.97E-05	455.93	13.22
NATURAL GAS MAXIMUM (100% capacity) SCENARIO								
Bldg. 72 Boiler #2	ALL	0.014	0.072	1.932	0.954	n/a	425.93	13.67
Bldg. 72 Boiler #3	ALL	0.011	0.057	1.545	0.763	n/a	478.15	30.85
Bldg. 72 Boiler #4	ALL	0.011	0.057	1.545	0.763	n/a	475.37	28.03
Bldg. 72 Boiler #5	ALL	0.011	0.057	1.545	0.763	n/a	455.93	23.00
NATURAL GAS TYPICAL (75% capacity) SCENARIO								
Bldg. 72 Boiler #2	ALL	0.011	0.054	1.449	0.716	n/a	425.93	6.83
Bldg. 72 Boiler #3	ALL	0.009	0.043	1.159	0.572	n/a	478.15	15.43
Bldg. 72 Boiler #4	ALL	0.009	0.043	1.159	0.572	n/a	475.37	14.02
Bldg. 72 Boiler #5	ALL	0.009	0.043	1.159	0.572	n/a	455.93	11.50
MAXIMUM (100% capacity) CRANE/COMPRESSOR								
Crane 20	ALL	0.020	0.120	1.700	0.366	n/a	449.80	47.30
Crane 21	ALL	0.020	0.120	1.700	0.366	n/a	449.80	47.30
Crane 22	ALL	0.020	0.120	1.700	0.366	n/a	449.80	47.30
Crane 24	ALL	0.020	0.120	1.700	0.366	n/a	449.80	47.30
Crane 25	ALL	0.020	0.120	1.700	0.366	n/a	449.80	47.30
Crane 27	ALL	0.020	0.120	1.700	0.366	n/a	449.80	47.30
Crane 29	ALL	0.020	0.120	1.700	0.366	n/a	449.80	47.30
Crane 31	ALL	0.029	0.039	1.759	0.460	n/a	449.80	39.20
Bldg. 72 Generator*	ALL	0.036	0.049	2.198	0.574	n/a	449.80	31.40
Air Compressor	ALL	0.016	0.100	1.419	0.306	n/a	449.80	39.50
PRIME TANNING, NORTH BERWICK, ME								
Boilers #1, 2 & 3	ST	10.69	n/a	n/a	n/a	n/a	450.00	42.74
	ANN	4.52	"	"	"	"	"	18.00
UNIVERSITY OF NEW HAMPSHIRE, DURHAM, NH								
Boilers #1, 2, 3 & 4	ST	46.29	n/a	n/a	n/a	n/a	533.00	24.00
	ANN	1.3808	"	"	"	"	"	"
Boiler #5	ST	4.41	n/a	n/a	n/a	n/a	461.00	2.063
	ANN	0.3068	"	"	"	"	"	"
PHILLIPS EXETER ACADEMY, EXETER, NH								
Boilers #2, 3 & 5	ST	29.177	n/a	n/a	n/a	n/a	502.60	2.45
	ANN	21.591	"	"	"	"	"	"
Boiler #6	ST	20.783	n/a	n/a	n/a	n/a	502.60	5.48
	ANN	15.379	"	"	"	"	"	"
FOSS MANUFACTURING, HAMPTON, NH								
6 Diesels	ANN	n/a	n/a	8.861	n/a	n/a	566.00	29.90
CB350	ANN	n/a	n/a	0.138	n/a	n/a	445.00	9.80
CB95	ANN	n/a	n/a	0.009	n/a	n/a	470.00	9.36
Coating Line Boiler	ANN	n/a	n/a	0.088	n/a	n/a	411.00	5.46
Salt Baths	ANN	n/a	n/a	0.004	n/a	n/a	441.00	4.16
PSNH, SCHILLER STATION, PORTSMOUTH								

Boilers #4, 5 & 6	ST ANN	461.64 50.88	33.33 3.66	n/a 10.71	n/a "	n/a "	438.00 "	20.40 "
Combustion Turbine	ALL	7.77	0.54	6.50	n/a	n/a	844.00	1.83
EDG	ST ANN	0.0005 0.00	0.007 0.0004	n/a 0.0114	n/a "	n/a "	752.00 "	70.24 "
PSNH, NEWINGTON STATION, NEWINGTON								
Boilers #1A & 1B	ST ANN	10.286 "	22.22 2.44	n/a 7.14	n/a "	n/a "	578.00 "	21.70 "
EGU1	ST ANN	1147.40 759.80	11.11 1.22	n/a 3.57	n/a "	n/a "	539.00 "	24.40 "
EDG	ST ANN	0.013 0.0007	0.069 0.004	n/a 0.058	n/a "	n/a "	804.00 "	11.10 "

Notes:

n/a Not Applicable
* < 100% engine capacity
ST Short Term averaging periods
ANN Annual averaging period

C. Applicant's modeled impacts.

Screening ISCST2 and CI-VM modeling was performed for SO₂, PM₁₀, NO₂, CO and Pb for several proposed #2 fuel oil, #6 fuel oil and natural gas operating load cases that represent maximum (100%), typical (75%), and minimum (50%) operating scenarios for the applicant's facilities. The ISCST2 screening analysis defined the maximum (100%) and minimum (50%) #2 and #6 fuel oils and maximum (100%) and typical (75%) natural gas building 72 boilers operating load scenarios to be the limiting operating load cases to be examined in the final sequential ISCST3 modeling. The CI-VM screening analysis defined the maximum (100%) operating load scenarios for all fuels to be the limiting operating load cases to be examined in the final CI-VM modeling. The applicant's cranes and air compressors were modeled at 100% capacity and the building 72 generator was modeled at < 100% capacity in all building 72 boilers operating load scenarios.

Simple and complex terrain predicted impacts were above significance levels for all SO₂, PM₁₀ and NO₂ averaging periods using screening modeling. Only simple terrain predicted impacts were above significance levels for CO 1-hour and 8-hour averaging periods. Table IV-3 summarizes the CI-VM screening complex terrain modeling results. No further modeling of CO 1-hour and 8-hour averaging periods in complex terrain is needed because complex terrain impacts for those averaging periods were below the respective CO significant impact levels. Emissions from

the cranes and air compressors were the dominating factor in 1-hour and 8-hour CO averaging period simple and complex terrain impacts.

Sequential modeling using ISCST3 for the applicant alone was then performed for the limiting operating load scenarios for all SO₂, PM₁₀, NO₂, and CO averaging periods. Table IV-4 summarizes the ISCST3 sequential modeling simple terrain results. The simple terrain predicted impacts are above significance levels for all SO₂, PM₁₀, CO and NO₂ averaging periods using the sequential ISCST3 model. No further modeling of 24-hour Pb is needed as all impacts were < 0.4% of the 24-hour Pb MAAQS.

Table IV-3. Modeled Complex Terrain Predicted Impacts from Portsmouth Naval Shipyard, Kittery, Alone.

Pollutant/ Averaging Period	CI/VM Max Impact (µg/m ³)	Max Impact Load Case	Receptor Distance from PNS (km)	Receptor Elevation (m)	Class II Significance Level (µg/m ³)
SO ₂ 3-hr	61.06	#6 100%	9.930	92.96	25
SO ₂ 24-hr	16.96	#6 100%	9.930	92.96	5
SO ₂ Annual	5.43	#6 100%	9.930	92.96	1
PM ₁₀ 24-hr	10.14	#6 100%	0.700	18.29	5
PM ₁₀ Annual	3.24	#6 100%	0.700	18.29	1
NO ₂ Annual	36.66**	#6 100%	0.700	18.29	1
Pb 24-hr	0.0008	#6 100%	9.930	92.96	--*
CO 1-hr	134.00	ALL	0.700	18.29	2000
CO 8-hr	93.80	ALL	0.700	18.29	500

* MAAQS for the 24-hr Pb averaging period is 1.5µg/m³

** Ambient Ratio Method used

Table IV-4. Modeled Simple Terrain Predicted Impacts from Portsmouth Naval Shipyard, Kittery, Alone.

Pollutant/ Averaging Period	ISCST3 Max Impact (µg/m ³)	Max Impact Load Case	Receptor UTME (km)	Receptor UTM N (km)	Receptor Elevation (m)	Class II Significance Level (µg/m ³)
SO ₂ 3-hr	323.91	#6 100%	358.700	4770.900	6.10	25
SO ₂ 24-hr	117.64	#6 100%	358.600	4770.800	6.10	5
SO ₂ Annual	11.63	#6 50%	358.700	4770.900	6.10	1
PM ₁₀ 24-hr	95.88	ALL	358.096	4771.313	3.05	5
PM ₁₀ Annual	5.46	#6 50%	358.700	4770.900	6.10	1
NO ₂ Annual	54.63**	NG 100%	358.651	4771.006	3.05	1
Pb 24-hr	0.00570	#6 100%	358.600	4770.800	6.10	--*
CO 1-hr	2377.48	ALL	358.096	4771.313	3.05	2000
CO 8-hr	781.58	ALL	358.096	4771.313	3.05	500

Notes:

* MAAQS for the 24-hr Pb averaging period is $1.5\mu\text{g}/\text{m}^3$

** Ambient Ratio Method used

D. Combined Source Modeling.

The applicant was shown to have significant impacts for SO_2 , PM_{10} , NO_2 and CO. Thus, other sources not explicitly included in the modeling analyses were included by using representative background concentrations for the area. Conservative urban and rural background concentrations were used and are based on existing (1992 to 1994) monitoring data reported by the MEDEP-BAQ Field Services Division. These background values are listed in Table IV-5.

Table IV-5. Background concentrations ($\mu\text{g}/\text{m}^3$)

Pollutant	Avg. Time	Urban Concentration*	Rural Concentration
SO_2	3-hr	229 ³	52 ¹
	24-hr	119 ³	29 ¹
	annual	24 ³	5 ¹
PM_{10}	24-hr	64 ³	54 ²
	annual	23 ³	10 ²
NO_2	annual	26 ³	26 ³
CO	1-hr	11995 ³	4568 ¹
	8-hr	6511 ³	2288 ¹

Notes:

* Only the area within the city boundary of Portsmouth, NH has this designation in the modeling receptor grid

¹ Dedham Bald Mountain

² Bridgton Upper Ridge Road

³ Portland PEOPLe Site

As the applicant's SO_2 , PM_{10} , NO_2 and CO impacts were significant, other sources needed to be considered in the final modeling demonstration. MEDEP identified the following six sources to be included in the modeling analysis:

- Prime Tanning in North Berwick, ME (SO_2 only)
- University of New Hampshire in Durham, NH (SO_2 only)
- Phillips Exeter Academy in Exeter, NH (SO_2 only)
- Foss Manufacturing in Hampton, NH (NO_2 only)
- Public Service New Hampshire (PSNH) Schiller Station in Portsmouth, NH (SO_2 , NO_2 and PM_{10})

- Public Service New Hampshire (PSNH) Newington Station in Newington, NH (SO₂, NO₂ and PM₁₀)

Combined source simple and complex terrain maximum impact modeling results are shown in Table IV-6. All pollutant averaging period highest impacts occurred with the simple terrain ISCST3 model. Because the highest simple terrain ISCST3 impacts occurred in the 1-km spacing receptor grid on the Maine/New Hampshire border near PSNH, a "hot-spot" ISCST3 modeling analysis was performed by MEDEP-BAQ using a 250 meter spacing receptor grid. MEDEP-BAQ also performed an ISCEV3 source contribution analysis for all potential MAAQS (Maine receptors) or NAAQS (New Hampshire receptors) violations. Results in Table IV-6, which include MEDEP-BAQ analyses show the maximum ISCST3 modeled 3-hour and 24-hour SO₂ and 24-hour PM₁₀ combined source impacts are greater than the respective MAAQS, however the applicant's facilities contributions to any potential violation were below the respective significant impact levels. Therefore, as shown in Table IV-6, the applicant's facilities in the proposed configurations will not cause or contribute to a violation of any SO₂, PM₁₀, NO₂ and CO averaging period Maine's Ambient Air Quality Standards (MAAQS) or National Ambient Air Quality Standards (NAAQS).

Table IV-6. Maximum Combined Source Impacts.

Pollutant Averaging Period/ Load Case	Max Impact (µg/m³)/ MODEL	Receptor UTM-E (km)	Receptor UTM-N (km)	Receptor Elevation (m)	Back- ground (µg/m³)	Max Total Impact (µg/m³)	MAAQS (NAAQS#) (µg/m³)
SO ₂ 3-hr All Cases	1704.74 ISCST3	354.750	4772.750	30.48	52	1756.74 (0.00*)	1150 (1300)
SO ₂ 24-hr All Cases	513.85 ISCST3	354.750	4772.750	30.48	29	542.85 (3.24*)	230 (365)
SO ₂ Annual #6 100%	39.43 ISCST3	354.750	4772.750	30.48	5	44.43	57 (80)
PM ₁₀ 24-hr All Cases	234.53 ISCST3	354.250	4773.000	18.29	54	284.53 (4.38*)	150 (150)
PM ₁₀ Annual #6 50%	5.82 ISCST3	358.700	4770.900	6.10	10	15.82	40 (50)
NO ₂ Annual NG 100%	56.23** ISCST3	358.651	4771.006	3.05	26	82.23	100 (100)
CO 1-hr ALL	2377.48 ISCST3	358.096	4771.313	3.05	4568	6945.48	40,000 (40,000)
CO 8-hr ALL	781.58 ISCST3	358.096	4771.313	3.05	2284	3065.58	10,000 (10,000)

Notes:

New Hampshire standards

* Maximum PNS contribution to predicted modeled violations of MAAQS and NAAQS

** Ambient Ratio Method used

E Summary

In summary, the applicant has made a demonstration that the applicant's facility in the proposed configurations will not cause or contribute to a violation of any SO₂, PM₁₀, NO₂, CO or Pb MAAQS or NAAQS. In addition, the applicant's facility will not consume Class I or Class II SO₂, TSP, PM₁₀ and NO₂ increment because the proposed emissions are below applicable baseline emissions.

ORDER

Based on the above Findings and subject to conditions listed below the Department concludes that the emissions from this source:

- will receive Best Practical Treatment,
- will not violate applicable emission standards,
- will not violate applicable ambient air quality standards in conjunction with emissions from other sources.

The Department hereby grants the Part 70 License A-452-70-A-I, subject to the following conditions:

STANDARD CONDITIONS

- (1) Employees and authorized representatives of the Department shall be allowed access to the licensee's premises during business hours, or any time during which any emission units are in operation, and at such other times as the Department deems necessary for the purpose of performing tests, collecting samples, conducting inspections, or examining and copying records relating to emissions and this license;
- (2) The licensee shall acquire a new or amended air emission license prior to commencing construction of a modification, unless specifically provided for in Chapter 140;
- (3) Approval to construct shall become invalid if the source has not commenced construction within eighteen (18) months after receipt of such approval or if construction is discontinued for a period of eighteen (18) months or more. The Department may extend this time period upon a satisfactory showing that an extension is justified, but may condition such extension upon a review of either the control technology analysis or the ambient air quality standards analysis, or both;
- (4) The licensee shall establish and maintain a continuing program of best management practices for suppression of fugitive particulate matter during any period of construction, reconstruction, or operation which may result in fugitive dust, and shall submit a description of the program to the Department upon request; **Enforceable by State-only**

- (5) The licensee shall pay the annual air emissions license fee to the Department, calculated pursuant to Title 38 MRSA §353;
- (6) The Part 70 license does not convey any property rights of any sort, or any exclusive privilege;
- (7) The licensee shall maintain and operate all emission units and air pollution control systems required by the air emission license in a manner consistent with good air pollution control practice for minimizing emissions; **Enforceable by State-only**
- (8) The licensee shall maintain sufficient records, to accurately document compliance with emission standards and license conditions and shall maintain such records for a minimum of six (6) years. The records shall be submitted to the Department upon written request or in accordance with other provisions of this license;
- (9) The licensee shall comply with all terms and conditions of the air emission license. The submission of notice of intent to reopen for cause by the Department, the filing of an appeal by the licensee, the notification of planned changes or anticipated noncompliance by the licensee, or the filing of an application by the licensee for the renewal of a Part 70 license or amendment shall not stay any condition of the Part 70 license.
- (10) All terms and conditions are enforceable by EPA and citizens under the CAA unless specifically designated as state enforceable.
- (11) The licensee may not use as a defense in an enforcement action that the disruption, cessation, or reduction of licensed operations would have been necessary in order to maintain compliance with the conditions of the air emission license;
- (12) In accordance with the Department's air emission compliance test protocol and 40 CFR Part 60 or other method approved or required by the Department, the licensee shall:
 - (a) perform stack testing under circumstances representative of the facility's normal process and operating conditions:
 - (i) within sixty (60) calendar days of receipt of a notification to test from the Department or EPA, if visible emissions, equipment operating parameters, staff inspection, air monitoring or other cause indicate to the Department that equipment may be operating out of compliance with emission standards or license conditions;
 - (ii) to demonstrate compliance with the applicable emission standards; or

- (iii) pursuant to any other requirement of this license to perform stack testing.
- (b) install or make provisions to install test ports that meet the criteria of 40 CFR Part 60, Appendix A, and test platforms, if necessary, and other accommodations necessary to allow emissions testing; and
- (c) submit a written report to the Department within thirty (30) days from the date of test completion.

Enforceable by State-only

- (13) If the results of a stack test performed under circumstances representative of the facility's normal process and operating conditions indicates emissions in excess of the applicable standards, then:
 - (a) within thirty (30) days following receipt of such test results, the licensee shall re-test the non-complying emission source under circumstances representative of the facility's normal process and operating conditions and in accordance with the Department's air emission compliance test protocol and 40 CFR Part 60 or other method approved or required by the Department; and
 - (b) the days of violation shall be presumed to include the date of stack test and each and every day of operation thereafter until compliance is demonstrated under normal and representative process and operating conditions, except to the extent that the facility can prove to the satisfaction of the Department that there were intervening days during which no violation occurred or that the violation was not continuing in nature; and
 - (c) the licensee may, upon the approval of the Department following the successful demonstration of compliance at alternative load conditions, operate under such alternative load conditions on an interim basis prior to a demonstration of compliance under normal and representative process and operating conditions.

Enforceable by State-only

- (14) Notwithstanding any other provision in the State Implementation Plan approved by the EPA or Section 114(a) of the CAA, any credible evidence may be used for the purpose of establishing whether a person has violated or is in violation of any statute, regulation, or Part 70 license requirement.
- (15) Compliance with the conditions of this Part 70 license shall be deemed compliance with any Applicable requirement as of the date of license issuance and is deemed a permit shield, provided that:

- (a) Such Applicable and state requirements are included and are specifically identified in the Part 70 license, except where the Part 70 license term or condition is specifically identified as not having a permit shield; or
- (b) The Department, in acting on the Part 70 license application or revision, determines in writing that other requirements specifically identified are not applicable to the source, and the Part 70 license includes the determination or a concise summary, thereof.

Nothing in this section or any Part 70 license shall alter or effect the provisions of Section 303 of the CAA (emergency orders), including the authority of EPA under Section 303; the liability of an owner or operator of a source for any violation of Applicable requirements prior to or at the time of permit issuance; or the ability of EPA to obtain information from a source pursuant to section 114 of the CAA.

- (16) The licensee shall retain records of all required monitoring data and support information for a period of at least six (6) years from the date of the monitoring sample, measurement, report, or application. Support information includes all calibration and maintenance records and all original strip-chart recordings and/or computer reports for continuous monitoring instrumentation, and copies of all reports required by the Part 70 license.
- (17) The licensee shall maintain records of all deviations from license requirements. Such deviations shall include, but are not limited to malfunctions, failures, downtime, and any other similar change in operation of air pollution control systems or the emission unit itself that is not consistent with the terms and conditions of the air emission license. The licensee shall notify the Department within two (2) days or the next working day, whichever is later, of such occasions and shall report the probable cause, corrective action, and any excess emissions in the units of the applicable emission limitation;
- (18) Upon the written request of the Department, the licensee shall establish and maintain such records, make such reports, install, use, and maintain such monitoring equipment, sample such emissions (in accordance with such methods, at such locations, at such intervals, and in such manner as the Department shall prescribe), and provide other information as the Department may reasonably require to determine the licensee's compliance status.
- (19) The licensee shall submit quarterly reports of any required monitoring as required by the Department. All instances of deviations from Part 70 license requirements must be clearly identified in such reports. All required reports must be certified by a responsible official.

- (20) The licensee shall submit a compliance certification to the Department and EPA at least annually, or more frequent if specified in the Applicable requirement by the Department. The compliance certification shall include the following:
- (a) The identification of each term or condition of the Part 70 license that is the basis of the certification;
 - (b) The compliance status;
 - (c) Whether compliance was continuous or intermittent;
 - (d) The method(s) used for determining the compliance status of the source, currently and over the reporting period; and
 - (e) Such other facts as the Department may require to determine the compliance status of the source;
- (21) The Part 70 license shall be reopened for cause by the Department or EPA, prior to the expiration of the Part 70 license, if:
- (a) Additional Applicable requirements under the CAA become applicable to the Part 70 major source with a remaining Part 70 license term of 3 or more years. However, no opening is required if the effective date of the requirement is later than the date on which the Part 70 license is due to expire, unless the original Part 70 license or any of its terms and conditions has been extended pursuant to Chapter 140;
 - (b) Additional requirements (including excess emissions requirements) become applicable to the Title IV source under the acid rain program. Upon approval by EPA, excess emissions offset plans shall be deemed to be incorporated into the Part 70 license;
 - (c) The Department or EPA determines that the Part 70 license contains a material mistake or that inaccurate statements were made in establishing the emission standards or other terms of conditions of the Part 70 license; or
 - (d) The Department or EPA determines that the Part 70 license must be revised or revoked to assure compliance with the Applicable requirements.

The licensee shall furnish to the Department within a reasonable time any information that the Department may request in writing to determine whether cause exists for modifying, revoking and reissuing, or terminating the Part 70 license or to determine compliance with the Part 70 license.

- (22) No license revision or amendment shall be required, under any approved economic incentives, marketable licenses, emissions trading or other similar programs or processes for changes that are provided for in the Part 70 license.

SPECIAL CONDITIONS

(23) Permit Shield for Non-Applicable Requirements

The following requirements have been specifically identified as not applicable based upon information submitted by the licensee in an application dated July 16, 1996.

Standard	Program:	Reason Why Not Applicable to the Portsmouth Naval Shipyard
National Emission Standards for Hazardous Air Pollutants 40 CFR Part 61	<u>Subpart V</u> . Equipment Leaks (Fugitive Emission Sources)	Subpart is applicable to pumps, compressors, pressure relief devices, sampling connection systems, open-ended valves or lines, valves, flanges, and other connectors, vessels, and control devices that operate in volatile hazardous air pollutant (VOHAP) service. VOHAP includes only Benzene and Vinyl Chloride. No equipment in benzene or vinyl chloride service at PNS.
Standards of Performance for New Stationary Sources 40 CFR Part 60	<u>Subpart D</u> Fossil Fuel Fired Steam Generators for Which Construction is Commenced After August 17, 1971	Applicable to fossil fuel fired steam generating units with maximum heat input rates greater than 250 MMBtu/hr. Portsmouth Naval Shipyard has no boilers with a total heat input of 250 MMBtu/hr. Therefore, the standard is not applicable.
	<u>Subpart Da</u> Electric Utility Steam Generation Units for Which Construction is Commenced After September 18, 1978	No affected units or facilities.
	<u>Subpart Db</u> Industrial-Commercial Steam Generating Units	Applicable to steam generating units that commenced Construction, modification, or reconstruction after June 19, 1984 with maximum heat input rates greater than 100 MMBtu/hr. All PNS boilers were manufactured and installed prior to this date. The conversion project does not meet the modification/reconstruction definition.
	<u>Subpart Dc</u> Small Industrial Commercial Institutional Steam Generating Units	Applicable to steam generating units that commenced construction, modification or reconstruction after June 9, 1989 with maximum heat generating rates greater than 10 MMBtu/hr but less than 100 MMBtu/hr. No affected units or facilities at this time.

**Portsmouth Naval Shipyard
York County
Kittery, Maine
A-452-70-A-I**

) **Departmental**
) **Findings of Fact and Order**
) **Part 70 Air Emission License**
31

Standards of Performance for New Stationary Sources 40 CFR Part 60	<u>Subpart K</u> Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced After June 11, 1973, and Prior to May 19, 1978	No affected units or facilities. Definition of petroleum liquids exempts #2 and #6 fuel oils.
Standards of Performance for New Stationary Sources 40 CFR Part 60 (continued...)	<u>Subpart Ka</u> Storage Vessels for Petroleum Liquid for Which Construction, Reconstruction, or Modification Commenced After May 18, 1978, and Prior to July 23, 1984	No affected units or facilities. Definition of petroleum liquids exempts #2 and #6 fuel oils.
	<u>Subpart Kb</u> Storage Vessels for Volatile Organic Liquids for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984	Applicable to Volatile Organic Liquid storage tanks with a capacity greater than or equal to 40 cubic meters (10,567 gal) that were constructed, modified or reconstructed after July 23, 1984. PNS does not have any tanks constructed after 7/23/84. Standard is not applicable.
National Emission Standards for Hazardous Air Pollutants 40 CFR Part 63	<u>Subpart II</u> Shipbuilding and ship repair (surface coating) facilities which are major sources of HAPs are required to control emissions using the maximum achievable control technology (MACT).	PNS is not a major source of HAPs. The facility has total potential HAP emissions of approximately 13 tpy and all individual potential HAP emissions are below the 10 tpy threshold.

Section Title/Description (State Regulations)	Comment
<i>(Chapter 104) Incinerator Particulate Emission Standard</i> This regulation establishes a limitation on the amount of particulate matter allowed to be emitted from each of several categories and sizes of incinerators and a limitation on the opacity of emissions from all incinerators.	Portsmouth Naval Shipyard has no incinerators and is therefore not applicable to this regulation.
<i>(Chapter 111). Petroleum Liquid Storage Vapor Control</i> This regulation requires all owners of fixed roof storage tanks with capacities greater than 39,000 gallons, storing gasoline, crude oil or any petroleum liquid whose vapor pressure is greater than 1.0 psia to install floating roofs to reduce the hydrocarbon vapors lost to the atmosphere.	Portsmouth Naval Shipyard does not have any volatile petroleum liquids with vapor pressure greater than 1.0 psia stored in fixed roof storage vessels with capacities greater than 39,000 gallons.

(Chapter 112). Bulk Terminal Petroleum Liquid
Transfer Requirements

This regulation requires bulk gasoline terminals loading tank trucks or trailers and who dispense 20,000 gallons or more of gasoline per day to install a vapor control system and requires tank truck tightness certification. This system must control gasoline vapors so that not more than 35 milligrams of vapor escapes for each liter of gasoline transferred.

Bulk gasoline terminal means a gasoline storage facility which receives gasoline from refineries...and delivers gasoline to bulk gasoline plants...and has a daily throughput of more than 20,000 gallons of gasoline.” [Chapter 100 (22)]. PNS is not a bulk gasoline terminal and is therefore not applicable.

Conditions #24, #25, #26, #27 and #28 pertain to the Boilers prior to being converted to fire natural gas.

(Condition #24 applicable prior to conversion to fire natural gas)

(24) Oil Boilers, Emission Units #2, #3, #4, and #5

A. PNS is licensed to operate the following boilers:

EMISSION UNIT ID	LOCATION	UNIT CAPACITY
Boiler #2	Building 72	182 MMBtu/hr
Boiler #3	Building 72	158 MMBtu/hr
Boiler #4	Building 72	158 MMBtu/hr
Boiler #5	Building 72	158 MMBtu/hr

[MEDEP Chapter 140, BPT]

B. The sulfur content of the #6 fuel oil fired in each boiler shall not exceed 0.5% by weight demonstrated by purchase records from the supplier.

[MEDEP Chapter 140, BPT]

C. Emissions from each boiler shall not exceed the following limits (Prior to Boiler conversion):

[lb/hour limits, Enforceable by State-only]

		Boilers #3, #4, #5	Boiler #2
Pollutant	lb/MMBtu	lb/hr (each)	lb/hr
PM	0.20	16.5	16.5
PM ₁₀	-	16.5	16.5
SO ₂	-	82.2	94.6
NO _x	0.35 (ozone season) 0.40	55.3	63.2
CO	-	5.3	6.1
VOC	-	1.4	1.6

D. PNS shall operate each boiler such that the visible emissions do not exceed 30% opacity on a six (6) minute block average basis, except for no more than two (2) six (6)

minute block averages in a 3-hour period. The Shipyard will continue to operate a televised monitor of the stacks, that operates 24 hours per day, and take corrective action if the opacity exceeds 30%.

[MEDEP Chapter 140, BPT]

NO_x RACT (Chapter 138 of the Maine DEP Regulations)

(Condition #25 applicable prior to conversion to fire natural gas)

(25) PNS shall meet the following requirements in an effort to reduce NO_x emissions:

(1) Running the boilers in the NO_x optimization program should in no way jeopardize the safe and reliable operation of the boilers. PNS shall operate the boilers within the limits of the following parameters to reduce NO_x emissions:

1) During the Ozone season 15 May -15 September (NO_x limit is 0.35 lbs/MMBtu)

a) Boiler #2

- (1) (<50 k lb/hr) @ summer loads - operate with top two burners out of service and less than 3% O₂.
- (2) (50-100 k lb/hr) @ intermediate loads - operate with 25% fuel bias and less than 2% O₂.
- (3) (100-150 k lb/hr) @ high loads - operate with 15% fuel bias and less than 2.2% O₂.

b) Boilers #3, #4, #5

- (1) (<35 k lb/hr) @ minimum boiler loads - operate with top burners out of service and less than 9% O₂.
- (2) (35-50 k lb/hr) @ low loads - operate with top two burners out of service and less than 7% O₂.
- (3) (50-85 k lb/hr) @ intermediate loads - operate with 20% fuel bias and less than 7.5% O₂.
- (4) (85-120 k lb/hr) @ high loads - operate with 5% fuel bias and less than 6.5% O₂.

2) Rest of the year - 16 September - 14 May (NO_x limit is 0.40 lbs/MMBtu)

a) Boiler #2

Boiler #2 will meet this emission rate at all loads. Fuel oil will be biased (oil pressure to the lower burners higher than oil pressure to upper burners) to at least 10%.

b) Boiler #3, #4, #5

These boilers will meet this emission rate at all loads. Fuel oil will be biased (oil pressure to the lower burners higher than oil pressure to upper burners) to at least 15%.

3) *Record keeping and Reporting (year round):*

- a) Continuously record steam load and O₂ (circular charts).
- b) Log fuel delivery pressure gauge readings (fuel bias) as part of normal data recording.
- c) Examine charts and log at end of each 24 hour day to determine if any exceedences of license requirements (above) occurred.
- d) Note in a written log the time, duration, cause, and steps taken for each exceedence event.

[MEDEP Chapter 140, BPT]

(Condition #26 applicable prior to conversion to fire natural gas)

- (26) PNS shall perform NO_x emission stack testing for Boilers #2, #3, #4, and #5 in accordance with 40 CFR Part 60 or other methods approved or required by the Department, to demonstrate their ability to meet 0.35 lb/MMBtu NO_x emission limit during the ozone season (May 1 – Sept 30). PNS shall demonstrate NO_x RACT compliance, during the ozone seasons, by stack testing for Boiler #2, #3, #4, and #5 every other year rather than annually beginning with the first stack tests conducted by June 30, 2000. This condition applies only to the boilers which are not converted to burn natural gas. In addition, this condition applies only to the boilers that will be used/operated during the year 2000 ozone season.

[MEDEP Chapter 140, BPT]

(Condition #27 applicable prior to conversion to fire natural gas)

- (27) PNS shall not exceed an annual #6 fuel oil (0.5% sulfur) cap of 30,000,000 gallons per year (12 month rolling total) demonstrated by purchase records from the supplier or fuel consumption records.

[MEDEP Chapter 140, BPT] **Enforceable by State-Only**

(Condition #28 applicable prior to conversion to fire natural gas)

- (28) PNS shall maintain records of monthly #6 fuel use indicating the quantity of fuel consumed, the percent (%) sulfur content of the fuel by weight demonstrated by purchase records from the supplier or fuel consumption records. Whenever SO₂ compliance emission testing is required, US EPA Method 6 shall be used to demonstrate compliance.

[MEDEP Chapter 140, BPT] **Enforceable by State-Only**

Conditions #29 through #37 pertain to the Boilers after being converted to fire natural gas.

- (29) PNS is licensed to operate the following boilers:

EMISSION UNIT ID	LOCATION	UNIT CAPACITY
Boiler #2	Building 72	182 MMBtu/hr
Boiler #3	Building 72	158 MMBtu/hr
Boiler #4	Building 72	158 MMBtu/hr
Boiler #5	Building 72	158 MMBtu/hr

[MEDEP Chapter 140, BPT]

- (30) The conversion to burn natural gas as their primary fuel with #2 fuel oil as back-up shall meet the following construction and NOx stack testing schedules:

Start construction - 1997

	Start Date	Completion Date
Boiler #3	Oct 22, 1997	June 20, 1999
Boiler #4	Apr 30, 2000	Mar 17, 2001
Boiler #5	Mar 18, 2001	Feb 5, 2002
Boiler #2	Aug 3, 1999	Apr 29, 2000

The natural gas supplier will provide gas to PNS starting January of 2000. Therefore, PNS will burn #2 fuel oil, with a maximum fuel sulfur content of 0.5% by weight, in the converted boilers until gas is available.

[MEDEP Chapter 140, BPT]

- (31) After each boiler is converted from firing #6 fuel oil, PNS will limit Boilers #2, #3, #4, and #5 emissions to the following when firing natural gas:

Pollutant	lb/MMBtu	[Enforceable by State-only] Boilers #3, #4, #5 (lb/hr) each	[Enforceable by State-only] Boilers #2 (lb/hr)
PM	0.08	0.5	0.6
PM ₁₀	--	0.5	0.6
SO ₂	--	13.3	16.3
NO _x	0.15 (natural gas)	27.7	31.9
CO	--	8.0	11.6
VOC	--	0.2	0.3

PNS shall be limited to the following short-term emission limits when firing #2 fuel oil as back-up:

Pollutant	lb/MMBtu	[Enforceable by State-only] Boilers #3, #4, #5 (lb/hr) each	[Enforceable by State-only] Boilers #2 (lb/hr)
PM	0.08	2.3	2.9
PM ₁₀	--	2.3	2.9

SO ₂	--	81.1	92.3
NO _x	0.30 (oil back-up)	48.0	54.6
CO	--	5.7	6.5
VOC	--	1.3	1.5

[MEDEP Chapter 140, BPT]

- (32) PNS shall limit NO_x emissions from Boilers #2, #3, #4, and #5 to 0.15 lb/MMBtu when combusting natural gas and 0.30 when firing #2 fuel oil. PNS shall perform NO_x and particulate (#2 fuel oil only) stack testing after the completion of each boiler conversion in accordance with 40 CFR Part 60 or other methods approved or required by the Department to demonstrate their ability to meet NO_x and particulate limits shown in Condition #31. A follow-up NO_x emission stack test, shall be performed within one year after the initial stack test is completed. The follow-up stack test shall be performed when operating on natural gas.

[MEDEP Chapter 140, BPT]

- (33) PNS shall not exceed a maximum firing of 3.92 billion cubic feet of natural gas and 5,060,550 gallons of #2 fuel oil, with a maximum sulfur content of 0.5% by weight, per year based on a 12 month rolling total.

[MEDEP Chapter 140, BPT] **Enforceable by State-Only**

- (34) Beginning January 1, 2000, annual oil capacity factor for each boiler must remain below 30% (2,966,000 gallons/year). If oil capacity factor exceeds 30% for any boiler during any twelve consecutive months (i.e. the first 12 month period will be calendar year 2000), PNS must notify the Bureau within 30 days, and must install and operate a continuous opacity monitoring system meeting the requirements of DEP Chapter 117 and 40 CFR Part 60 Appendix B Specification 1 within six months.

[MEDEP Chapter 140, BPT]

- (35) After PNS converts all boilers to burn natural gas, PNS shall operate each boiler such that the visible emissions do not exceed an opacity of 20% on a six (6) minute block average basis, except for no more than two (2) six (6) minute block averages in a 3-hour period, demonstrated in accordance with 40 CFR Part 60, Appendix A, Method 9. Based on the type of fuel for which the boilers will be designed and when operating in a manner consistent with good air pollution control practices, it is unlikely the boilers will exceed the opacity limits. Therefore, initial and periodic monitoring by the source for opacity in the form of visible emission testing in accordance with 40 CFR Part 60, Appendix A, Method 9 is not required at this time.

[MEDEP Chapter 140, BPT]

- (36) If the schedule to convert the boilers at PNS is not met, then the boilers will be retrofitted to achieve the RACT emission limit of 0.30 lb NO_x/MMBtu and a continuous opacity monitor will be required for each boiler stack. PNS shall update

the MEDEP on an annual basis as the gas conversion project progresses. If there is unavoidable slippage in the gas conversion schedule, PNS may request a schedule revision by amendment to this license.

[MEDEP Chapter 140, BPT] **Enforceable by State-Only**

- (37) When using #2 fuel oil after the conversion to burn natural gas and #2 oil, PNS shall maintain records of monthly #2 fuel use indicating the quantity of fuel consumed and the percent (%) sulfur content of the fuel. Whenever SO₂ compliance emission testing is required, US EPA Method 6 shall be used to demonstrate compliance.

[MEDEP Chapter 140, BPT] **Enforceable by State-Only**

Conditions #38-#41 pertain to the proposed 5 MW natural gas turbine generator project

- (38) PNS is proposing a co-generation project that will consist of a 5 megawatt (MW) natural gas-fired turbine with supplemental duct burning. BACT for the combustion turbine is low NO_x burners for NO_x control, good combustion practices for CO and emission rate limits for PM and VOC. PNS can operate the turbine for 8,760 hours per year, however, the duct burner shall be limited 5,383 hours per year, based on a 12 month rolling total. A log shall be maintained documenting the duct burner's hours of operation. [MEDEP Chapter 140, BPT] **Enforceable by State-Only**
- (39) PNS shall meet the following requirements for the proposed 5 MW natural gas fired turbine generator with a heat recovery steam generator and supplemental duct burner:

The natural gas-fired combustion turbine shall meet the following limits:

Pollutant	Load	ppmdv	lb/MMBtu	lb/hr
PM	All	--	0.02	1.3
PM ₁₀	All	--	--	1.3
SO ₂	All	--	--	0.1
NO _x	All	25 (corrected to 15% O ₂)	0.10	6.7
CO	All	--	--	8.2
VOC	All	--	--	0.3

The natural gas-fired duct burner shall not exceed the following emission limits:

Pollutant	Load	ppmdv	lb/MMBtu	lb/hr
PM	All	--	0.02	1.0
PM ₁₀	All	--	--	1.0
SO ₂	All	--	--	0.1
NO _x	All	25 (corrected to 15% O ₂)	0.10	4.7
CO	All	--	--	3.8
VOC	All	--	--	0.2

[MEDEP Chapter 140, BPT]

- (40) Exhaust from the proposed 5 MW turbine generator shall vent through a 167 foot above ground stack. Visible emissions from the turbine shall not exceed 10% on a six (6) minute block average basis, except for no more than two (2) six (6) minute block averages in a 3-hour period, demonstrated in accordance with 40 CFR Part 60, Appendix A, Method 9. [MEDEP Chapter 140, BPT]
- (41) PNS shall perform NO_x stack testing, within one year, after the completion of the turbine project in accordance with 40 CFR Part 60 or other methods approved or required by the Department to demonstrate their ability to meet the lb/MMBtu NO_x limit shown in Condition #39. A follow-up NO_x emission stack test shall be performed within one year after the initial stack test is completed.
[MEDEP Chapter 140, BPT]

The following conditions pertain to PNS regardless of the boiler conversion project.

- (42) PNS is subject to the following requirements in order to minimize VOC emissions from painting and coating operations Units #10 and #13.

The total non-exempt fugitive VOC emissions (not including VOC emissions from degreasing operations) from the Portsmouth Naval Shipyard shall not exceed 48 tons per year based on a 12 month rolling total updated monthly and shall not exceed 15 tons during any one calendar month, where:

- i. the first 12 months shall be from January 1, 1996 to December 31, 1996;
 - ii. the pounds of VOC emissions are calculated using the PNS Hazardous Substance Management System (HSMS). The tracking system HSMS is described in Enclosure (1) of the July 11, 1997 submittal. The HSMS is used to track all hazardous material and VOC and HAP emissions. PNS may create an equivalent system, approved by the Department, to track VOC and HAP emissions.
 - iii. The HSMS shall provide what coatings are used and actual emissions. The system shall provide a demonstration that the gallons of specific coating used multiplied by the actual VOC content is less than the allowable emissions. Allowable emissions are determined by the gallons of coating used multiplied by the RACT emission limits. [MEDEP Chapter 140, BPT]
- (43) PNS shall use the HSMS tracking system, or equivalent system approved by the Department, as noted above. PNS shall meet the following Volatile Organic HAP (VOHAP) limits for Marine Coatings:

Coating Categories	Grams/liter coating (minus water and exempt compounds)	Grams/liter solids temp $\geq 4.5^{\circ}\text{C}$	Grams/liter solids temp $< 4.5^{\circ}\text{C}$
General Use	340	571	728
Specialty Air Flask	340	571	728
Antenna	530	1,439	
Antifoulant	400	765	971
Heat resistant	420	841	1,069
High-gloss	420	841	1,069
High-temperature	500	1,237	1,597
Inorganic zinc high build	340	571	728
Military exterior	340	571	728
Mist	610	2,235	---
Navigational aids	550	1,597	---
Nonskid	340	571	728
Nuclear	420	841	1,069
Organic zinc	360	630	802
Pretreatment wash primer	780	11,095	---
Repair and maint. of thermoplastics	550	1,597	---
Rubber camouflage	340	571	728
Sealant for thermal spray aluminum	610	2,235	---
Special marking	490	1,178	---
Specialty interior	340	571	728
Tack coat	610	2,235	---
Undersea weapons systems	340	571	728
Weld-through precon. primer	650	2,885	---

PNS may use up to fifty gallons of any combination of coatings which exceed the VOC emission limitation of the above table during any twelve consecutive month period.

In the event that small amounts of specialty coating with a higher VOC content is needed, then emissions averaging over a 30 day period will be allowed to provide flexibility. When using the emissions averaging, PNS must show compliance by actual daily emissions averaged over the 30 day period.

[MEDEP Chapter 140, BPT]

- (44) PNS, for the purpose of demonstrating ongoing non-applicability to the Shipbuilding MACT and ongoing compliance with VOC RACT requirements, shall continue to track HAP and VOC use and report the results to the MEDEP annually as is currently required under Chapter 137. PNS shall limit total HAP emissions to less than 25 tons per year and shall limit any individual HAP to less than 10 tons per year.

[MEDEP Chapter 140, BPT]

- (45) PNS shall maintain "Good Housekeeping" practices, including but not limited to: careful application of aerosol spray materials, sealing of VOC material containers to

reduce evaporative loss, proper personnel training in the use of VOC application equipment and clean-up activities, and proper handling of all VOC containing materials in a manner to minimize the likelihood of spills.

[MEDEP Chapter 130, BPT]

- (46) PNS shall meet the requirements of Chapter 130 of the Department's Regulations for all applicable solvent degreasing operations at the Shipyard.

[MEDEP Chapter 130, BPT]

- (47) PNS currently has four cold solvent cleaning machines, which contain halogenated solvent (methylene chloride). These cleaners shall meet the requirements of 40 CFR 63, Subpart T – “National Emission Standards for Halogenated Solvent Cleaning”. PNS shall include HAP emissions from these solvent degreasers in the total facility-wide emissions.

[MEDEP Chapter 140, BPT]

Facility-wide limits

[MEDEP Chapter 140, BPT]

- (48) PNS shall limit total facility emissions to the following: **[Enforceable by State-only]**

Pollutant	TPY (Prior to January 1, 2001)	TPY (After January 1, 2001)
PM	131	72
PM ₁₀	131	72
SO ₂	1175	210
NO _x	1062	515
CO	156	129
VOC	73	67
HAP	10 (single), 25 (total)	10 (single), 25 (total)

- (49) Open abrasive blasting and spray painting (except aerosol spray can painting) are not allowed. These operations shall take place in containments such as removable submarine covers, sandblast booths, paint booths, etc. Emissions from sandblast booths or paint booths shall vent through bag houses or air filters. The bag houses and air filters at PNS must be used to control PM emissions and operate properly at all times abrasive blasting or painting is being performed. The pressure drop across the bag house shall be maintained between manufacturer's specifications. The air filters do not have pressure drop readings.

PNS will develop an inspection checklist for bag houses and air filters. The facility shall perform a weekly inspection of bag houses and air filters in continuous use to ensure there are no broken, torn, or clogged bags or filters that would allow excess emissions. The weekly inspections of the bag houses and air filters are required only when they are in use. Depending on workload, there are periods when some bag houses or air filters are not used for several weeks or

months. Bag houses or air filters have not been in use for more than one week shall be inspected upon startup.

- i Whenever compliance testing is required, USEPA Method 5, shall be used. When approved in writing an equivalent test method may be substituted for the required test method.
- ii PNS shall install, operate, calibrated and maintain a pressure drop monitor at the baghouse.
- iii PNS shall maintain the following records:
 - a) A log of the name or initials of the operator performing each weekly baghouse inspection and the time each inspection took place.
 - b) A description of any maintenance or repairs of the baghouse that resulted from the inspection.

[MEDEP Chapter 140, BPT] **Enforceable by State-Only**

- (50) PNS shall ensure that all rented diesel compressors comply with current air emission standards. The sulfur content of all diesel fuel used by PNS shall not exceed 0.05% by weight. The diesels that operate the cranes meet RACT by their current configuration, maintenance schedule, and operation. All other stationary reciprocating engines are operated less than 500 hours per year as emergency/standby sources. The emergency generators' hours of operation shall be recorded in a log book. Generator units less than 0.5 MMBtu/hr are considered insignificant per Chapter 140 Appendix B Section B and therefore do not need to be included in the "hours of operation" log book.

[MEDEP Chapter 140, BPT]

(51) **Gasoline Storage Tank**

- A. The fill pipe shall extend within 6 inches of the bottom of the gasoline storage tank. [MEDEP Chapter 118]
- B. The licensee shall maintain records of the monthly and annual throughput of gasoline. [MEDEP Chapter 118]

(52) **Insignificant Activities**

Once during each semi-annual reporting period, the licensee shall inspect and determine whether the categorically insignificant activities are in compliance with all applicable requirements. The licensee shall record in a log the results of this inspection.

[MEDEP Chapter 140, BPT]

- (53) For Compliance Assurance, PNS shall comply with the following:

The Bureau of Air Quality finds the following Compliance Assurance Plan to be reasonable and appropriate.

Record-Keeping

For all of the equipment parameter monitoring and recording, required by this license, the licensee shall maintain records of the most current six year period and the records shall include a complete data set of all monitored parameters as specified in this license. All parameter records shall be made available to the Bureau of Air Quality upon request.

[MEDEP Chapter 140, BPT]

(54) Semiannual Reporting

The licensee shall submit semiannual reports every six months to the Bureau of Air Quality. The initial semiannual report is due July 30, 2000, 30 days from the end of the second calendar quarter following the date of signature of this license.

A. Each semiannual report shall include a summary of the periodic monitoring required by this license.

B. All instances of deviations from license requirements and the corrective action taken must be clearly identified and provided to the Department in summary form for each six-month interval.

[MEDEP Chapter 140]

(55) Annual Compliance Certification

The licensee shall submit an annual compliance certification to the Department in accordance with Condition (20) of this license. The initial annual compliance certification is due Jan 30, 2001, 30 days from the end of the fourth calendar quarter. The annual compliance certification shall be submitted with the second semiannual report after the signature date of this license.

[MEDEP Chapter 140]

(56) Annual Emission Statement

The licensee shall annually report to the Department, in a specified format, fuel use, operating rates, use of materials and other information necessary to accurately update the State's emission inventory. [MEDEP Chapter 137]

(57) The term of this license shall be five (5) years from the signature date below.

DONE AND DATED IN AUGUSTA, MAINE THIS DAY OF 2000.

**Portsmouth Naval Shipyard
York County
Kittery, Maine
A-452-70-A-I**

) **Departmental**
) **Findings of Fact and Order**
) **Part 70 Air Emission License**
43

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: _____
MARTHA G. KIRKPATRICK, COMMISSIONER

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application August 28, 1996

Date of application acceptance September 12, 1996

Date filed with Board of Environmental Protection _____

This Order prepared by Edwin L. Cousins, Bureau of Air Quality